Körber AG

Abteilung Entwicklung Anlagen

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Hck/fk.-

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Test Report

Subject: Strips/stem processing and HT-Expansion with the Hauni HT-Conditioner

Client: La Suerte Cigar & Cigarette Factory (P.M.) Manila/Philippines

Date: September 26./27.1988

The tests have been carried out in the presence of:

Mr. A. Caltabiano	- La Suerte, Manila
Mr. R. Fernandez	- La Suerte, Manila
Mr. S.H.J. Lamden	- La Suerte, Manila
Mr. T.S. Winkle	- La Suerte, Manila
Mr. W.V. Evans	- Philip Morris, Richmond
Mr. P. Pulfer	- FTR, Neuchâtel
Mr. C.A. Wood	- FTR, Neuchâtel

1.) Testmaterial:

Hauni received approx. 1200 kg strips with a moisture content of 12.6 % and approx. 500 kg stems with a moisture content of 12.5 %.

2.) Test procedures:

2.1.) Strips/Cut-Rag processing:

The strips-blend has been conditioned in an HT-Conditioner to a target moisture of 19 % and were then directly fed into an Hauni-KTC-Cutter.

After cutting the rag was directly submitted to the HT-Expansion-Process (except Test 4, 101) immediately followed by counter current (Test 5, 202) and co-current (Test 6, 212) rotary drying.

For details see attached flow sheet, Annex 1.

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2.2.) Stem/CRS processing

In order to simulate a pre-conditioning process followed by an intermediate storing stage, the stems were conditioned in an HT-Conditioner to a target moisture of approx. 28 % m.c. Storing time to absorb the applied water: 16 hours.

After this, the stems passed a second conditioning process in connection with an intensive steaming in a second HT-Conditioner (90 - 95° C) prior to rolling. To remove excessive surface water which usually causes additional pull-outs at cutting, the stems then passed through a pneumatic cooling system.

After cutting the CRS was directly submitted to the H.T.-Expansion-Process immediately followed by rotary (Test 1, 303 and Test 2, 404) and fluidized bed drying (Test 3, 505).

All important details about the test procedure are shown in the attached flow sheet, Annex 1.

3.) Sampling and laboratory proceeding:

Tobacco moisture:

Five samples each were taken after pre-conditioning, after cutting, after H.T.-Expansion and after drying/cooling. Sampling was done, when process conditions had stabilized.

From each sample two moisture determinations were carried out by means of oventests. (HERAEUS-OVEN, 3 hrs, 100° C, 10 g sample weight).

Filling power:

From each test one larger sample (approx. 2 kg) was taken after drying/cooling for the determination of tobacco filling power. After conditioning these samples in a climatic test cabinet for approx. 3 days in order to achieve a moisture equilibrium, the filling power has been measured with a BORGWALDT-Densimeter. (Sample weight 20 g, load 3 kg, time 30 sec.)

From each sample 10 filling power determinations and the corresponding moisture determinations were carried out on two moisture levels.

The regression lines for filling power as function of tobacco moisture were calculated and plotted. (See attached graphics, Annexes 2 (cut-rag) and 3 (CRS).

Fibre distribution:

From each test a second 2 kg-sample was taken after drying/cooling for the determination of the fibre distribution.

From each sample 10 screening tests were carried out with a LAVIB-Screening-Shaker, Type St 67. Sample weight 50 g, average tobacco moisture 13.75 %, screening time 10 minutes.

All laboratory results and collected test parameter are shown in the following synopsis "Test parameter and laboratory results".

4.) Test parameter and laboratory results:

4.1.) Strips/Cut-Rag:		Reference Test 4. (101)	Test 5. (202)	Test 6. (212)
Initial tobacco moisture	%	12.6	12.6	12.6
Feed rate	kg/h	600	600	600
Steam pressure at conditioning	bar	1.5	1.5	1.5
Water addition at conditioning	l/h	31	31	31
Cutting width	mm	0.85	0.85	0.85
Moisture after cutting	%	19.7	19.7	19.7
Steam pressure at HT-Expansion	bar	./.	3	3
Moisture after HT-Expansion	%	./.	21.6	21.6
Feed rate at rotary drying	kg/h	680	650	650
Steam pressure at rotary drying	bar	2.5	2.6	1.2
Processair temp. at rotary drying	°C	95	95	99
Counter-current air flow	m/s	0.15	0.15	./.
Co-current air-flow	m/s	./.	./.	0.45
Moisture after drying/cooling	%	13.2	13.4	13.3
Filling power at 12.8 % m.c.	mm	**34.6**	**36.69**	**36.93**
Tob. temp. after HT-Tunnel	°C	./.	94-98	92-94
Tob. temp. before dryer	°C	25	60	60
Tob. temp. exit dryer	°C	70	65	65

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Fibre distribution after drying/cooling:

Mesh sizes	Test 4. (101) 13.7 % m.c.	Test 5. (202) 13.7 % m.c.	Test 6. (212) 13.7 % m.c.
> 4 mm	7.44 g	9.6 g	7.17 g
	14.9 %	19.2 %	14.4 %
> 2 mm	16.01 g	16.94 g	16.25 g
	32.2 %	34.1 %	32.7 %
> 1 mm	16.27 g	14.95 g	16.76 g
	32.7 %	30.1 %	33.7 %
> 0.5 mm	9.2 g	7.43 g	8.89 g
	18.5 %	14.9 %	17.5 %
Pan	0.83 g	0.85 g	0.86 g
	1.7 %	1.7 %	1.7 %

4.2.) Stem/CRS

		Reference Test 1. (303)	Test 2. (404)	Test 3. (505)
Initial tobacco moisture	%	12.5	12.5	12.5
Tob. moisture after pre-conditioning	%	27.6	27.6	27.6
Storing time	hrs	16	16	16
Tob. temp. before flattening	°C	95	95	95
Roller distance	mm	0.8	0.8	0.8
Tob. temp. after flattening	°C	71	71	71
Tob. temp. after cooling	°C	36	36	36
Cutting width	mm	0.15	0.15	0.15
Tob. moisture after cutting	%	33.7	33.7	33.7
Steam pressure HT-Cond.	bar	./.	7	10
Tob. moisture after HT-Expansion	%	./.	36.2	./.
Tob. temp. after HT-Expansion	°C	./.	98	103
Processair temp. rotary dryer	°C	95	95	./.
Co-current airflow	m/s	0.45	0.45	./.
Steam pressure rotary dryer	bar	4.9	4.8	./.
Processair temp. Vibro-dryer	°C	./.	./.	180
Tob. moisture after drying/cooling	%	13.7	14.1	14.3
Tob. filling power at 13 % m.c.	mm	29.48	34.07	37.28

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Fibre distribution after drying/cooling:

Mesh sizes	Test 1. (303) 13.83 % m.c.	Test 2. (404) 13.63 % m.c.	Test 3. (505) 13.81 % m.c.
> 4 mm	0.32 g	0.21 g	0.28 g
	0.6 %	0.4 %	0.6 %
> 2 mm	2.78 g	8.65 g	14.75 g
	5.6 %	17.4 %	29.5 %
> 1 mm	33.1 g	32.57 g	27.92 g
	66.4 %	65.3 %	55.9 %
> 0.5 mm	12.19 g	7.02 g	5.52 g
	24.4 %	14.1 %	11.0 %
Pan	1.48 g	1.4 g	1.5 g
	3.0 %	2.8 %	3.0 %

5.) Summary:

No difficulties occured in the handling of both testmaterials at any stage of the process.

The filling power results of both testmaterials correspond with our expectations.

Hck.
(Hackmack)

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